

# SEARCH REQUEST FORM Scientific and Technical Information Center - EIC2800

Rev. 3/15/2004 This is an experimental format -- Please give suggestions or comments to Jeff Harrison, JEF-4B68, 272-2511.

Date 6/2/04 Serial # 101613,607 Priority Application Date \_\_\_\_\_  
 Your Name M. Lewis Examiner # \_\_\_\_\_  
 AU 2892 Phone 272-1838 Room 5A30  
 In what format would you like your results? Paper is the default. PAPER DISK EMAIL

If submitting more than one search, please prioritize in order of need.

The EIC searcher normally will contact you before beginning a prior art search. If you would like to sit with a searcher for an interactive search, please notify one of the searchers.

Where have you searched so far on this case?

Circle: USPT DWPI EPO Abs JPO Abs IBM TDB

Other: \_\_\_\_\_

What relevant art have you found so far? Please attach pertinent citations or Information Disclosure Statements. 5537284 5821572 5825600

6074899 WU ESD Protection IEEE 1997 Ker IEEE 2000  
Kleveland IEEE 2000

What types of references would you like? Please checkmark:

Primary Refs ☒ Nonpatent Literature \_\_\_\_\_ Other \_\_\_\_\_  
 Secondary Refs ☒ Foreign Patents \_\_\_\_\_  
 Teaching Refs \_\_\_\_\_

What is the topic, such as the **novelty**, motivation, utility, or other specific facets defining the desired **focus** of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

Claims 1-15  
- STI Shallow Trench Isol  
Problem: See pages 1-3  
Solution: " " 4 & 5  
- Device  
- ESD Protection Electrostatic disch  
- SCR Silicon Controlled Rectifier  
- Low input capacitance structure  
- Low Capacitance  
- Good Protection + Good Performance

## Staff Use Only

Searcher: HARRISON

Searcher Phone: 22511

Searcher Location: STIC-EIC2800, JEF-4B68

Date Searcher Picked Up: 6-10

Date Completed: 6-14-04

Searcher Prep/Rev Time: 90

Online Time: 90

## Type of Search

Structure (#) \_\_\_\_\_

Bibliographic ☒

Litigation \_\_\_\_\_

Fulltext ☒

Patent Family \_\_\_\_\_

Other Scisearch

- DPCI

## Vendors

STN ☒

Dialog ☒

Questel/Orbit \_\_\_\_\_

Lexis-Nexis \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Other \_\_\_\_\_

## FILE 'WPIX, HCAPLUS' ENTERED AT 09:15:46 ON 14 JUN 2004

L1 6 S (US6344385 OR US6426380 OR US6573566 OR US2002084485 OR US20020084485)/PN  
 L6 4 S (US5537284 OR US5821572 OR US5825600 OR 6074899)/PN  
 L7 10 S L1 OR L6  
 L8 5 S L7 AND (NFET OR FET OR TRANSISTOR##### OR MOSFET OR NMOSFET)  
 L9 4 S L7 AND DIODE  
 L10 3 S L7 AND DUMMY  
 L11 7 S (L8 OR L9 OR L10)  
 L12 3 S L7 NOT L11  
 L13 1 S L7 AND RECTIF#####  
 L14 8 S L11 OR L13  
 L15 SEL L14 1- IC MC : 31 TERMS  
 L16 SEL L14 1- : 96 TERMS

## FILE 'DPCI' ENTERED

L17 12 S L16/PN.D  
 L18 975 S SCR OR (SI OR SILICON) (W) CONTROL##### (W) RECTIF#####  
 L19 2937 S NMOS OR NFET OR NMOSFET OR "N" (2W) (MOS OR TRANSISTOR OR FET OR FIELD OR MOSFET)  
 L20 7 S L18 AND L19  
 L21 43 S DEPLET##### AND (L18 OR L19)  
 L22 176 S (ESD OR ELECTROSTATIC### OR DAMAG#####) AND (L18 OR L19)  
 L23 17 S (L21 OR L22) AND DRAIN AND SOURCE  
 L24 17 S (L21 OR L22) AND DOP#####  
 L25 32 S (L21 OR L22) AND (PAIR OR TWO OR DOUBLE)  
 L26 7 S (L21 OR L22) AND BIPOLAR#####  
 L27 16 S (L21 OR L22) AND CAPACIT#####  
 L28 6 S (L21 OR L22) AND PARASIT#####  
 L29 2 S (L21 OR L22) AND THICKNESS  
 L30 12 S (L21 OR L22) AND AREA  
 L31 0 S (L21 OR L22) AND DIMENSION#####  
 L32 1 S (L21 OR L22) AND (BORO? OR BPSG)  
 L33 15 S (L21 OR L22) AND (MULTI OR MULTIPLE OR DIFFER#####)  
 L34 24 S (L21 OR L22) AND WELL  
 L35 20 S (L21 OR L22) AND LOW#####  
 L36 34 S (L21 OR L22) AND INPUT#####  
 L37 13 S (L21 OR L22) AND (H01L031?/IC)  
 L38 168 S L17 OR (L20 OR L21) OR (L23 OR L24 OR L25 OR L26 OR L27 OR L28 OR L29 OR L30  
 OR L31 OR L32 OR L33 OR L34 OR L35 OR L36 OR L37)  
 L39 14 S L38 AND H01L031?/IC  
 L40 168 S (L38 OR L39)  
 L41 SEL PLU=ON L40 1- PRN : 216 TERMS

## FILE 'WPIX, JAPIO, HCAPLUS' ENTERED

L42 290 S L41  
 L43 108 S L42 AND (H01L021? OR H01L031?)/IC  
 L44 38 S L43 AND (SCR OR RECTIF#####)  
 L45 92 S L43 AND (ESD OR DISCHARG##### OR DAMAG##### OR ELECTROSTATIC#####)  
 L46 12 S L43 AND DEPLET#####  
 L47 56 S L43 AND (VOLTAGE OR POTENTIAL)  
 L48 19 S L43 AND (STI OR ISOLAT#####)  
 L49 5 S L43 AND ELECTRIC## (2A) (CONNECT##### OR INTERCONNECT#####)  
 L50 58 S L43 AND (CONNECT#### OR INTERCONNECT#####)  
 L51 3 S L43 AND PASSIVAT#####  
 L52 4 S L43 AND THICKNESS  
 L53 34 S L43 AND (AREA OR SIZE OR DIMENSION)  
 L54 9 S L43 AND (LENGTH OR WIDTH)  
 L55 12 S L43 AND (MULTI OR MULTIPLE OR DIFFEREN##### OR PROFILE OR HIGHER OR LOWER  
 OR LIGHTER OR LIGHTLY OR HEAVY OR HEAVILY OR HEAVIER) (2A) DOP####  
 L56 2 S L43 AND (MULTI OR MULTIPLE OR DIFFEREN##### OR PROFILE OR HIGHER OR LOWER  
 OR LIGHTER OR LIGHTLY OR HEAVY OR HEAVILY OR HEAVIER) (2A) IMPURITY  
 L57 0 S L43 AND (MULTI OR MULTIPLE OR DIFFEREN##### OR PROFILE OR HIGHER OR LOWER  
 OR LIGHTER OR LIGHTLY OR HEAVY OR HEAVILY OR HEAVIER) (2A) (ION OR IMPLANT#####)  
 L58 19 S L43 AND (BOUNDARY OR GUARDRING OR RING OR GUARD#### OR PERIPHER##### OR  
 PERIMET##### OR OUTSIDE OR EXTERNAL OR OUTER)  
 L59 0 S L43 AND (MULTI OR MULTIPLE OR DIFFEREN##### OR PROFILE OR HIGHER OR LOWER OR LIGHTER OR  
 LIGHTLY OR HEAVY OR HEAVILY OR HEAVIER) (5A) (CONC OR CONCD OR CONCEN OR CONCENTRAT#####)

## FILE 'WPIX, JAPIO, HCAPLUS' ENTERED

L60 41 S L43 AND (NFET OR NMOS OR NMOSFET OR NMISFET OR NMESFET OR NMIS OR NMES)  
 L61 35 S L43 AND "N"(2W) (TRANSISTOR OR FET OR FIELD EFFECT OR MOS OR MOSFET OR MISFET OR MESFET OR MIS OR MES)  
 L62 2 S L43 AND "N"(2W) (DEVICE OR ELEMENT)  
 L63 32 S L43 AND (TWO OR DOUBLE OR PAIR#### OR TWIN)  
 L64 27 S L43 AND (NWEEL OR "N"(2W) WELL##)  
 L65 30 S L43 AND (CONCENTRATION OR DOPANT OR DOPED)  
 L66 8 S L43 AND (LOW## (3A) (CAPACIT#####) OR LOW## (3A) INPUT#### OR INPUT##### (3A) CAPACIT#####)  
 L67 10 S L43 AND (POLYSI OR POLYCRYST##### OR POLY(W) (SI OR SILICON) OR POLYSILICON OR POLY FILM OR POLY LAYER)  
 L68 9 S L43 AND (SILICA OR SIO OR SIO2 OR DIOXIDE OR SILICA/CN)  
 L69 5 S L43 AND (BPSG OR BOROPHOS##### OR "B"(6A) "P" OR BORON(6A) PHOSPHORUS)  
 L70 1 S L43 AND (BPSG OR BPSG/CN)  
 L71 37 S L44 AND L45  
 L72 37 S L71 AND (L46 OR L47 OR L48 OR L49 OR L50 OR L51 OR L52 OR L53 OR L54 OR L55 OR L56 OR L57 OR L58 OR L59 OR L60 OR L61 OR L62 OR L63 OR L64 OR L65 OR L66 OR L67 OR L68 OR L69 OR L70)  
 L73 65 S L49 OR (L51 OR L52) OR (L54 OR L55 OR L56) OR L46 OR L62 OR (L66 OR L67 OR L68 OR L69 OR L70 OR L71 OR L72)  
 L74 17 S L44 AND L45 AND (L60 OR L61 OR L62)  
 L75 17 S L73 AND L74  
 L76 48 S L73 NOT L75  
 L77 1 S L76 AND PASSIV#####  
 L78 12 S L76 AND (STI OR ISOLAT#####)  
 L79 26 S L76 AND ?CONNECT?  
 L80 33 S (L77 OR L78 OR L79)

## FILE 'REGISTRY' ENTERED

L81 1 S BPSG OR BOROPHOSPHO?  
 L82 5 S B.O.P.SI/MF  
 L83 40 S B/MF  
 L84 49 S P/MF  
 L85 1 S SILICA/CN  
 L86 1 S SILICON/CN

## FILE 'HCAPLUS' ENTERED

L87 16197 S (L81 OR L82) OR (L83 AND L84)  
 L88 63090 S L85 AND L86  
 L89 1210 S L87 AND L88  
 L90 325 S L89 AND (POLYSI OR POLYCRYST##### OR POLY(W) (SI OR SILICON) OR POLYSILICON OR POLY FILM OR POLY LAYER)  
 L91 16 S L90 AND (NFET OR NMOS OR NMOSFET OR NMISFET OR NMESFET OR NMIS OR NMES)  
 L92 9 S L90 AND "N"(2W) (TRANSISTOR OR FET OR FIELD EFFECT OR MOS OR MOSFET OR MISFET OR MESFET OR MIS OR MES)  
 L93 25 S (L91 OR L92)  
 L94 0 S L93 AND (SCR OR RECTIF#####)  
 L95 0 S L93 AND (ESD OR ELECTROSTATIC#### OR DAMAG##### OR DISCHARG#####)  
 L96 4890 S (L81 OR L82 OR L83 OR L84) AND L85 AND L86  
 L97 1253 S L96 AND (POLYSI OR POLYCRYST##### OR POLY(W) (SI OR SILICON) OR POLYSILICON OR POLY FILM OR POLY LAYER)  
 L98 84 S L96 AND (NFET OR NMOS OR NMOSFET OR NMISFET OR NMESFET OR NMIS OR NMES)  
 L99 79 S L96 AND "N"(2W) (TRANSISTOR OR FET OR FIELD EFFECT OR MOS OR MOSFET OR MISFET OR MESFET OR MIS OR MES)

FILE 'HCAPLUS' ENTERED

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L100      16  S   L96 AND (SCR OR RECTIF#####)
L101     277  S   L96 AND (ESD OR ELECTROSTATIC#### OR DAMAG##### OR DISCHARG#####)
L102     151  S   L96 AND PASSIV#####
L103     422  S   L96 AND (STI OR ISOLAT#####)
L104     288  S   L96 AND ?CONNECT?
L105      44  S   (L98 OR L99) AND (L100 OR L101 OR L102 OR L103 OR L104)
L106       4  S   L105 AND CONCENTRATION
L107      32  S   L105 AND DOP#####
L108      28  S   L105 AND ION
L109      30  S   L105 AND IMPLANT?
L110       7  S   L105 AND IMPUR?
L111       1  S   L102 AND L103 AND L104
L112       2  S   L100 AND L101
L113      41  S   ((L91 OR L92 OR L93) OR (L98 OR L99 OR L100) OR L105) AND (L106 OR L107 OR
L108 OR L109 OR L110)
L114       6  S   L93 AND L113
L115       6  S   L113 AND (DOUBLE OR TWO OR ANOTHER OR PAIR#### OR TWIN)
L116       5  S   L115 NOT L114
L117       1  S   L113 AND ((SCR OR RECTIF#####) OR (SI OR SILICON)(2A)CONTROL#####)
L118       1  S   L117 NOT (L114 OR L115)
L119       6  S   L113 AND SHALLOW TRENCH###
L120       5  S   L119 NOT (L114 OR L115 OR L116 OR L117 OR L118)
L121       0  S   L113 AND PASSIVAT#####
L122       0  S   (L91 OR L92 OR L93) AND PASSIVAT#####
L123       2  S   (L98 OR L99 OR L100) AND PASSIVAT#####
L124       2  S   L123 NOT (L114 OR L115 OR L116 OR L117 OR L118 OR L119 OR L120)

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14jun04 09:17:37 User259284 Session D2796.2

File 2:INSPEC 1969-2004/Jun W1  
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Set	Items	Description
S1	3146	CI=(B SS(S)SI SS(S)O SS)
S2	1837	CI=(P SS(S)SI SS(S)O SS)
S3	375	CI=(P DOP(S)SI SS(S)O SS)
S4	480	CI=(B DOP(S)SI SS(S)O SS)
S5	375	CI=(B SS(S)SI SS(S)O SS(S)P SS)
S6	4864	S1:S5 OR BPSG OR BOROPHOSPHO?
S7	307	S6 AND (R1:R6 OR R10 OR R8 OR R11:R13 OR ESD OR ELECTROSTA-TIC? OR DAMAG???)
S8	16	S6 AND (R1:R5 OR R9:R11 OR SCR OR SCRS OR (SI OR SILICON) (-3N) (CONTROL?????? OR RECTIF?????))
S9	0	7AND8
S10	304776	(R1:R6 OR R10 OR R8 OR R11:R13 OR ESD OR ELECTROSTATIC? OR DAMAG???)
S11	20428	(R1:R5 OR R9:R11 OR SCR OR SCRS OR (SI OR SILICON) (3N) (CON-TROL?????? OR RECTIF?????))
S12	1160	10AND11
S13	19	S12 AND PASSIVAT?????
S14	33	S12 AND (STI OR ISOLAT????? OR SHALLOW()TRENCH?????)
S15	118	S12 AND (CONNECT? OR INTERCONNECT?)
S16	32	S12 AND CI=DOP
S17	41	S12 AND DOP????
S18	32	S12 AND CONCENTRATION??
S19	77	S12 AND DENSIT?????
S20	11720	(R1:R9 OR FET OR FETS OR MOS OR MOSFETS) AND "N"/TI,DE,ID
S21	6554	NMOS OR NMOSFET? OR NFET?? OR "N"(2W) (FIELD()EFFECT?? OR F-ET OR FETS) OR NMES OR MNIS OR NMISFET? OR NMESFET?
S22	598	S7:S8 OR S13:S19
S23	27	S20:S21 AND S22
S24	12	S23 AND (DIFFEREN????? OR MULTI OR MULTIPLE OR DOUBLE OR -PAIR OR TWIN OR TWO)
S25	2	S23 AND DEPLET???????
S26	5	S23 AND (THICKNESS?? OR AREA OR AREAS OR LENGTH?? OR WIDTH-?? OR HEIGHT??)
S27	1	S23 AND DIMENSION??
S28	6	S25:S27 NOT S24
S29	4	S23 AND (BOROPHOSPHOSIL? OR BPSG??)
S30	1	S29 NOT (S28 OR S24)

SYSTEM:OS - DIALOG OneSearch

File 348:EUROPEAN PATENTS 1978-2004/Jun W02

(c) 2004 European Patent Office

File 349:PCT FULLTEXT 1979-2002/UB=20040610,UT=20040603

(c) 2004 WIPO/Univentio

Set	Items	Description
S1	24597	DIFFERENT??? (W) (DOP??? OR IMPUR???? OR CONCENTRAT????? OR -DENSIT???? OR ION OR IONS OR IONIC)
S2	950	IC=H01L? AND S1
S3	20	S2 AND (SCR OR SCRS OR RECTIF?????????)/TI,CM,AB
S4	69	S2 AND (DEPLET????? OR ZENER?????)/TI,AB,CM
S5	485	S2 AND (STI OR ISOLAT????? OR SHALLOW()TRENCH?????)
S6	57	S2 AND (ESD OR DISCHARG????? OR ELECTROSTATIC????????? OR DA-MAG?????)/TI,AB,CM
S7	2	3AND4
S8	11	3AND5

S9 3 3AND6  
S10 43 4AND5  
S11 6 4AND6  
S12 32 5AND6  
S13 1 8AND10  
S14 2 8AND12  
S15 3 10AND12  
S16 9 S7 OR S9 OR S11 OR S13:S15  
S17 6 S16 AND (NMOS OR NFET?? OR NMOSFET???? OR "N"(2W)(FET OR F-  
ETS OR TRANSISTOR?? OR MOS OR MOSFET?? OR MIS OR MES OR MESFE-  
T?? OR MISFET??))

14jun04 11:12:43 User259284 Session D2797.2

SYSTEM:OS - DIALOG OneSearch

File 34:SciSearch(R) Cited Ref Sci 1990-2004/Jun W1  
(c) 2004 Inst for Sci Info

File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec  
(c) 1998 Inst for Sci Info

Set	Items	Description
S1	36	CR='JOHNSON NM, 1981, V38, P900, APPL PHYS LETT'
S2	0	S1 AND PASSIV??????????
S3	0	S1 AND (STI OR ISOLAT?????????)

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SYSTEM:OS - DIALOG OneSearch

File 34:SciSearch(R) Cited Ref Sci 1990-2004/Jun W1

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File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec

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Set	Items	Description
S1	9	CR='WU CY, 1992, V27, P274, IEEE J SOLID-ST CIRC'
S2	1	CR='CHUNGYU W, 1991, V26, P1324, IEEE J SOLID STAT'
S3	0	S1:S2 AND PASSIV???????
S4	0	S1:S2 AND (STI OR ISOLAT????? OR SHALLOW()TRENCH?????)
S5	6	S1:S2 AND (NMOS? OR NFET? OR NMES? OR NMIS?)
S6	3	S1:S2 AND "N"
S7	7	S5:S6
S8	5	S7 AND (SCR OR SCRS OR RECTIF?????????)
S9	5	S8 AND (ESD OR ELECTROSTAT? OR DISCHARG? OR DAMAG?)
S10	0	S9/2003-2004